



MDC Resource Science

Shortleaf Pine Community Restoration and Monitoring

Science Notes



Shortleaf Pine Community Restoration and Monitoring

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Summary

Shortleaf pine was once a prominent component in the Missouri Ozarks, creating pine-oak and mixed oak-pine woodlands. However, extensive logging, frequent wildfire and over-grazing led to the current oak dominated forest.

Loss of overstory pine seed trees, competition from heavily stocked oak and later fire suppression has

further limited pine regeneration.

As managers began to face removal of large tracts of declining black and scarlet oak, they recognized the opportunity to use this overstory reduction as the first step in restoring natural pine-oak communities. A prime candidate was the MIDCO Pine Flats area of Peck Ranch CA (Fig. 1). Combinations of slashing, harvest and prescribed burning were used initially to promote pine regeneration, and vegetation plots were monitored in 2000 and 2002. By 2004, forestry and wildlife managers had developed the MIDCO Pine Flats Restoration Plan. The plan provides guidance for both management and direction of information needs to re-establish a diverse pine-oak woodland. Three methods of treatment releasing seedling pine through control of hardwood competition were suggested: prescribed burning, herbicide, and mechanical removal. Additional plots have now been established in areas within MIDCO that are specifically designated for the most intensive pine restoration. Area managers are using the three methods above to increase pine and vegetation. This information will provide a measure of the effects of each treatment on

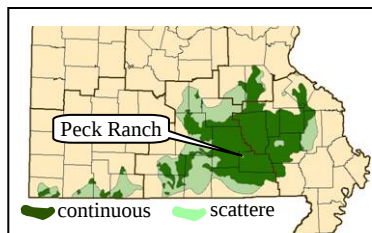


Figure 1: Historic shortleaf pine distribution in the Missouri Ozarks

Goal: To evaluate methods of pine release for effectively restoring Shortleaf Pine-Oak/Blueberry communities

pine survival and growth, advancement into the overstory, and changes in ground plant composition.

Project Details

- Study area divided into 3

replicate units of each treatment and 1 control unit (Fig. 2)

- Species, height and diameter recorded for overstory, saplings and seedlings
- Percent ground cover and percent cover by species of ground flora is recorded
- Sub-sample of pine seedlings is tagged for tracking survival
- The height of all woody species is recorded to determine competition within 3 feet of a subsample of tagged seedlings.

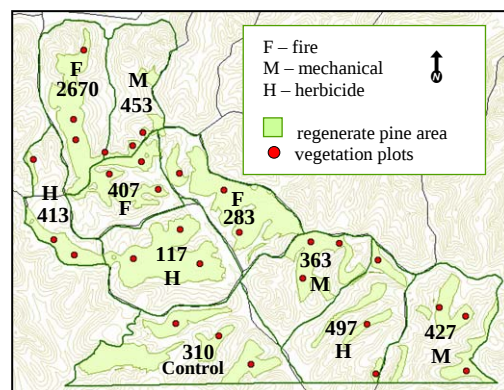


Figure 2. MIDCO Pine Flats – average pine seedlings per acre by treatment unit in winter, 2007

Preliminary Results

- Site preparation has encouraged pine regeneration (Fig. 2)
- Number of species in the ground flora initially increased with reduction of canopy cover (Fig. 3), but subsequently decreased slightly as re-sprouting oak and Blackberry thickets began to form denser, brushy conditions

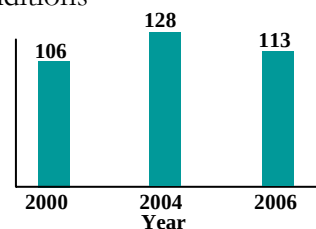


Figure 3. Total number of species in ground flora (forbs, grasses, woody regeneration) in monitoring plots

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